IN THE CLAIMS

1. (Previously presented) A method of monitoring intra-thoracic fluid content, comprising:

measuring intra-thoracic impedance between a first electrode and a second electrode at a time point relative to a cardiac cycle, said time point characterized by a reduced amount of electrical noise due to reduced electrical and mechanical cardiac activity and providing a cardiac-gated impedance measurement;

removing at least a portion of remaining noise from the impedance measurement;

storing the filtered impedance measurement;

performing the first three steps at the time point relative to the cardiac cycle for a predetermined number of cardiac cycles to thereby generate a set of filtered impedance data; and

mathematically manipulating the set of impedance data to render a representative impedance for said set of impedance data

wherein said method is performed once per day on different dates and further comprising:

comparing the representative impedance for each set of impedance data;

in the event that a most recent set of impedance data indicates a relatively drier patient condition, providing an indication of the relatively drier patient condition; and

in the event that a most recent set of impedance data indicates a relatively wetter patient condition, providing an indication of the relatively wetter patient condition.

2. (Previously presented) A method according to claim 1, wherein the time point relative to the cardiac cycle is selected from the group consisting of: a refractory portion, an isovolumic phase, an early isovolumic phase, a late part of a systolic phase, an early part of a diastolic phase, a minimum rate of change of cardiac pressure

(dP/dt_{min}), a predetermined interval after delivery of a pacing pulse to a cardiac chamber, and a moment prior to a scheduled pacing pulse to the cardiac chamber.

3. (Original) A method according to claim 2, wherein the predetermined interval after delivery of the pacing pulse to a cardiac chamber comprises an interval of between 10 and 30 milliseconds.

4. (Previously presented) A method according to claim 3, wherein the pacing pulse comprises a monophasic pulse of energy.

5. (Previously presented) A method according to claim 3, wherein the pacing pulse comprises a biphasic pulse of energy.

6. (Previously presented) A method according to claim 3, wherein the pacing pulse comprises a predetermined pulse of electrical current.

7. (Previously presented) A method according to claim 3, wherein the pacing pulse comprises a predetermined pulse of electrical potential.

8. (Original) A method according to claim 1, wherein the removing step further comprises filtering the set of filtered impedance data.

9. (Original) A method according to claim 8, wherein the filtering step further comprises applying a low-pass filter to the set of filtered impedance data sample.

10. (Original) A method according to claim 1, wherein the first electrode comprises a coil electrode.

11. (Original) A method according to claim 10, wherein the first electrode comprises coil electrode adapted to be disposed in the right ventricle.

12. (Previously presented) A method according to claim 10, wherein the first electrode comprises coil electrode adapted to be disposed in a portion of the superior vena cava.

13. (Previously presented) A method according to claim 10, wherein the second electrode is selected from the group consisting of: a canister-based electrode, a canister-mounted surface electrode, a surface-mounted electrode, a ring electrode, a tip electrode, and a coil electrode.

14. (Canceled)

15. (Previously presented) A method according to claim 1, wherein the indication comprises a fluid status trend display that correlates to the relatively drier patient condition or the relatively wetter patient condition.

16. (Previously presented) A method according to claim 15, wherein said fluid status trend display is selected from the group consisting of: an alphabetical display, a textual display, a graphical display, a display of at least one line segment, a display of a slope of a line segment, a colored display, an audible display, and a tactile display.

17. (Original) A method according to claim 1, further comprising:
disabling a cardioversion therapy circuit or a defibrillation therapy circuit.

18. (Original) A method according to claim 17, wherein in the event that at least one criteria for a fibrillation condition is met, performing the following steps:

re-connecting the cardioversion therapy circuit or the defibrillation therapy circuit; and

halting performance of the claimed method.

19. (Previously presented) A method according to claim 1, further comprising:

performing a cross-check of the measured impedance values using an alternate impedance measurement pathway.

20. (Previously presented) A method according to claim 19, wherein said alternate impedance measurement pathway includes an electrode selected from the group consisting of:

a coil electrode adapted to be disposed in operative communication with a portion of a right ventricle, a coil electrode adapted to be disposed in operative communication with a portion of a superior vena cava, a coil electrode adapted to be disposed in operative communication with a portion of coronary sinus, a device canister, a surface-mounted electrode, a ring electrode, a tip electrode, and an electrode forming a part of a subcutaneous electrode array.

21. (Original) A method according to claim 19, further comprising:

performing an impedance-based lead integrity test;

storing a lead impedance value resulting from the impedance-based lead integrity test;

comparing the lead impedance value with a prior lead impedance value; and

in the event the stored lead impedance value differs from the prior lead impedance value by more than a predetermined amount, declaring the set of impedance data flawed, and optionally providing an alert signal to the patient,

in the event the stored lead impedance value does not differ from the prior lead impedance value by more than a predetermined amount, declaring the set of impedance data valid.

22. (Previously presented) A method according to claim 19, further comprising:

measuring a related parameter during processing of a set of impedance data, said related parameter being selected from the group consisting of: a minute ventilation measurement, a respiration rate, and a tidal volume for the patient; and

storing a representative value of the related parameter.

23. (Original) A method according to claim 22, further comprising:

comparing the stored representative value of the related parameter to another representative value of the related parameter; and

in the event that a difference between the comparison of the representative values does not exceed a threshold value, declaring the set of impedance data valid.

24. (Previously presented) A computer readable medium for performing a method of monitoring intra-thoracic fluid content, comprising:

instructions for measuring intra-thoracic impedance between a first electrode and a second electrode at a time point relative to a cardiac cycle, said time point characterized by a reduced amount of electrical noise due to reduced electrical and mechanical cardiac activity and providing a cardiac-gated impedance measurement;

instructions for removing at least a portion of remaining noise from the impedance measurement;

instructions for storing the filtered impedance measurement;

instructions for performing the first three steps at the time point relative to the cardiac cycle for a predetermined number of cardiac cycles to thereby generate a set of filtered impedance data; and

instructions for mathematically manipulating the set of impedance data to render a representative impedance for said set of impedance data,

wherein said method is performed once per day on different dates and further comprising:

instructions for comparing the representative impedance for each set of impedance data;

in the event that a most recent set of impedance data indicates a relatively drier patient condition, instructions for providing an indication of the relatively drier patient condition; and

in the event that a most recent set of impedance data indicates a relatively wetter patient condition, instructions for providing an indication of the relatively wetter patient condition.

25. (Previously presented) A medium according to claim 24, wherein the time point relative to the cardiac cycle is selected from the group consisting of: a refractory portion, an isovolumic phase, an early isovolumic phase, a late part of a systolic phase, an early part of a diastolic phase, a minimum rate of change of cardiac pressure (dP/dt_{min}), a predetermined interval after delivery of a pacing pulse to a cardiac chamber, and a moment prior to a scheduled pacing pulse to the cardiac chamber.

26. (Original) A medium according to claim 25, wherein the predetermined interval after delivery of the pacing pulse to a cardiac chamber comprises an interval of between 10 and 30 milliseconds.

27. (Original) A medium according to claim 24, wherein the pulse of energy comprises a monophasic pulse of energy.

28. (Original) A medium according to claim 24, wherein the pulse of energy comprises a biphasic pulse of energy.

29. (Original) A medium according to claim 24, wherein the pulse of energy comprises a predetermined pulse of electrical current.

30. (Original) A medium according to claim 24, wherein the pulse of energy comprises a predetermined pulse of electrical potential.

31. (Original) A medium according to claim 24, wherein the removing step further comprises filtering the set of filtered impedance data.

32. (Original) A medium according to claim 31, wherein the filtering step further comprises applying a low-pass filter to the set of filtered impedance data sample.

33. (Original) A medium according to claim 24, wherein the first electrode comprises a coil electrode.

34. (Original) A medium according to claim 33, wherein the first electrode comprises coil electrode adapted to be disposed in the right ventricle.

35. (Previously presented) A medium according to claim 33, wherein the first electrode comprises coil electrode adapted to be disposed in a portion of the superior vena cava.

36. (Previously presented) A medium according to claim 33, wherein the second electrode is selected from the group consisting of: a canister-based electrode, a canister-mounted surface electrode, a surface-mounted electrode, a ring electrode, a tip electrode, and a coil electrode.

37. (Canceled)

38. (Previously presented) A medium according to claim 24, wherein the indication comprises a fluid status trend display that correlates to the relatively drier patient condition or the relatively wetter patient condition.

39. (previously presented) A medium according to claim 38, wherein said fluid status trend display is selected from the group consisting of: an alphabetical display, a textual display, a graphical display, a display of at least one line segment, a display of a slope of a line segment, a colored display, an audible display, and a tactile display.

40. (Original) A medium according to claim 24, further comprising:

instructions for disabling a cardioversion therapy circuit or a defibrillation therapy circuit.

41. (Original) A medium according to claim 40, wherein in the event that at least one criteria for a fibrillation condition is met, performing the following steps:

instructions for re-connecting the cardioversion therapy circuit or the defibrillation therapy circuit; and

instructions for halting performance of the claimed method.

42. (Previously presented) A medium according to claim 24, further comprising:

instructions for performing a cross-check of the measured impedance values using an alternate impedance measurement pathway.

43. (Previously presented) A medium according to claim 42, wherein said alternate impedance measurement pathway includes an electrode selected from the group consisting of:

a coil electrode adapted to be disposed in operative communication with a portion of a right ventricle, a coil electrode adapted to be disposed in operative communication with a portion of a superior vena cava, a coil electrode adapted to be disposed in operative communication with a portion of coronary sinus, a device canister, a surface-mounted electrode, a ring electrode, a tip electrode, and an electrode forming a part of a subcutaneous electrode array.

44. (Original) A medium according to claim 42, further comprising:

instructions for performing an impedance-based lead integrity test;

instructions for storing a lead impedance value resulting from the impedance-based lead integrity test;

instructions for comparing the lead impedance value with a prior lead impedance value; and

in the event the stored lead impedance value differs from the prior lead impedance value by more than a predetermined amount, instructions for declaring the set of impedance data flawed, and optionally providing an alert signal to the patient,

in the event the stored lead impedance value does not differ from the prior lead impedance value by more than a predetermined amount, instructions for declaring the set of impedance data valid.

45. (Previously presented) A medium according to claim 42, further comprising:

instructions for measuring a related parameter during processing of a set of impedance data, said related parameter being selected from the group consisting of: a minute ventilation measurement, a respiration rate, and a tidal volume for the patient; and

instructions for storing a representative value of the related parameter.

46. (Original) A medium according to claim 45, further comprising:

instructions for comparing the stored representative value of the related parameter to another representative value of the related parameter; and

in the event that a difference between the comparison of the representative values does not exceed a threshold value, instructions for declaring the set of impedance data valid.

47. (Currently amended) A system for performing a method of monitoring intra-thoracic fluid content, comprising:

means for measuring intra-thoracic impedance between a first electrode and a second electrode during a time point relative to a cardiac cycle, said time point characterized by a reduced amount of electrical noise due to reduced electrical and mechanical cardiac activity and providing a cardiac-gated impedance measurement;

means for removing at least a portion of remaining noise from the impedance measurement;

means for storing the filtered impedance measurement;

means for performing the first three steps at the time point relative to the cardiac cycle for a predetermined number of cardiac cycles to thereby generate a set of filtered impedance data; and

means for mathematically manipulating the set of impedance data to render a representative impedance for said set of impedance data

wherein said ~~system method is performed~~ is programmed to operate once per day on different dates and further comprising:

means for comparing the representative impedance for each set of impedance data;

means for providing an indication of the relatively drier patient condition operable in the event that a most recent set of impedance data indicates a relatively drier patient condition; and

means for providing an indication of the relatively wetter patient condition in the event that a most recent set of impedance data indicates a relatively wetter patient condition.

48. (Previously presented) A system according to claim 47, wherein the time point relative to the cardiac cycle is selected from the group consisting of: a refractory portion, an isovolumic phase, an early isovolumic phase, a late part of a systolic phase, an early part of a diastolic phase, a minimum rate of change of cardiac pressure (dP/dt_{min}), a predetermined interval after delivery of a pacing pulse to a cardiac chamber, and a moment prior to a scheduled pacing pulse to the cardiac chamber.

49. (Previously presented) A method of assessing fluid status of a patient, comprising:

a) injecting a single pulse of energy from a first electrode at a time point relative to a cardiac cycle when a chamber of heart is in a refractory state;

b) receiving a portion of the pulse of energy at a second electrode;

c) measuring a resultant impedance value for the pulse of energy;

d) storing the resultant impedance value; and

e) performing steps a-d for a predetermined number of cardiac cycles until a sample set of resultant impedance values are stored;

wherein said method is performed once per day on different dates and further comprising:

comparing the representative impedance for each set of impedance data;

in the event that a most recent set of impedance data indicates a relatively drier patient condition, providing an indication of the relatively drier patient condition; and

in the event that a most recent set of impedance data indicates a relatively wetter patient condition, providing an indication of the relatively wetter patient condition.

50. (Previously presented) A method according to claim 49, wherein the injecting step further comprises: injecting during a phase selected from the group consisting of: an isovolumic phase, an early isovolumic phase, a late portion of a systolic phase, an early portion of a diastolic phase, a minimum rate of change of cardiac pressure (dP/dt_{min}), a predetermined interval following delivery of a pacing pulse, and a moment prior to delivery of a pacing pulse.

51. (Original) A method according to claim 49, further comprising:

e) filtering the sample set to remove noise attributable to respiratory effort.

52. (Original) A method according to claim 51, wherein the filtering step further includes a low-pass filtering step.

53. (Original) A method according to claim 49, wherein the first electrode comprises a coil electrode.

54. (Previously presented) A method according to claim 53, wherein said coil electrode is adapted to be disposed in operative communication with a cardiac tissue selected from the group consisting of: a portion of a superior vena cava, a portion of a right ventricle, and a portion of a coronary sinus.

55. (Previously presented) A method according to claim 49, wherein the second electrode is selected from the group consisting of: a canister-based electrode, a canister-mounted surface electrode, a surface-mounted electrode, a ring electrode, a tip electrode, and a coil electrode.

56. (canceled)

57. (Original) A method according to claim 56, wherein the indication comprises a fluid status trend display that correlates to the relatively drier patient condition or the relatively wetter patient condition.

58. (Previously presented) A method according to claim 57, wherein said fluid status trend display is selected from the group consisting of: an alphabetical display, a textual display, a graphical display, a display of at least one line segment, a display of a slope of a line segment, a colored display, an audible display, and a tactile display.

59. (Original) A method according to claim 49, further comprising:
disabling a cardioversion therapy circuit or a defibrillation therapy circuit.

60. (Original) A method according to claim 59, wherein in the event that at least one criteria for a fibrillation condition is met, performing the following steps:

re-connecting the cardioversion therapy circuit or the defibrillation therapy circuit; and

halting performance of the claimed method.

61. (Previously presented) A method according to claim 49, further comprising:

performing a cross-check of the measured impedance values using an alternate impedance measurement pathway.

62. (Previously presented) A method according to claim 61, wherein said alternate impedance measurement pathway includes an electrode selected from the group consisting of:

a coil electrode adapted to be disposed in operative communication with a portion of a right ventricle, a coil electrode adapted to be disposed in operative communication with a portion of a superior vena cava, a coil electrode adapted to be disposed in operative communication with a portion of coronary sinus, a device canister, a surface-mounted electrode, a ring electrode, a tip electrode, and an electrode forming a part of a subcutaneous electrode array.

63. (Canceled)

64. (Canceled)

65. (Previously presented) A method according to claim 10, wherein the first electrode comprises a coil electrode adapted to be disposed in a portion of a coronary sinus.

66. (Previously presented) A medium according to claim 33, wherein the first electrode comprises coil electrode adapted to be disposed in a portion of a coronary sinus.

67. (Previously presented) A method according to claim 62, wherein said method is performed once per day on different dates and further comprising:
comparing the representative impedance for each set of impedance data;
in the event that a most recent set of impedance data indicates a relatively drier patient condition, providing an indication of the relatively drier patient condition; and

in the event that a most recent set of impedance data indicates a relatively wetter patient condition, providing an indication of the relatively wetter patient condition.

68. (Previously presented) A method according to claim 67, wherein the step of providing an indication of the relatively wetter patient condition further comprises:

providing a wireless signal to an implantable drug pump wherein said signal commands operative circuitry of the drug pump to dispense a diuretic substance.

69. (Previously presented) A method according to claim 67, wherein the step of providing an indication of the relatively wetter patient condition further comprises:

providing a patient alert signal to the patient;

providing a data transfer command to an implantable medical device; or altering a pacing therapy delivery regime.

70. (Previously presented) A method according to claim 1 wherein the representative impedance is an average of the set of impedance data.

71. (Previously presented) A method according to claim 1 wherein the predetermined number of cardiac cycles used to generate the set of impedance data spans at least one respiration cycle.